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SITREP: The Maritime Defense and Security Research Newsletter

2009-05

SITREP: The NPS Maritime Defense and Security Research Program Newsletter ; v. 39 (May/June 2009)

Naval Postgraduate School (U.S.). Maritime Defense and Security Research Program



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SITREP

THE NPS MARITIME DEFENSE AND SECURITY RESEARCH
PROGRAM NEWSLETTER

<http://www.nps.edu/research/mdsr/>



Volume 39
May/Jun 2009

Dear Readers,

PLEASE submit a short 200-300-word article introducing your organization's Maritime Security and Defense-related mission and activities or add an event to our calendar.

Contact Ms. Rita Painter at rpainte@nps.edu.

HIGHLIGHTED RESEARCH

Defender-Attacker Optimization Model

Self-Propelled Semi-Submersibles now transport an estimated 75% of cocaine originating from Colombia and headed for the United States. There are several types of search platforms (i.e., units to detect, classify, and interdict) being employed by the Joint Interagency Task Force South to combat the semi-submersibles. We use a defender-attacker optimization model to maximize the defender's probability of successful detection and classification of the semi-submersible through the advantageous disposition of these search platforms against an intelligent attacker operating the semi-submersible. We assume the attacker has imperfect knowledge of defender platform disposition but is aware that there are defenders that must be avoided. Given this assumption, the solution to the defender-attacker model is a mixed (i.e., probabilistic) strategy for the defender and a least-risk path for the attacker. We demonstrate our defender-attacker model with both an Eastern Pacific and a Caribbean scenario using five representative search platform types whose detection and classification performance vary by platform, and by geography. In each of these cases, we find that our model prescribes a face-valid defensive plan; defenders take advantage of geography by positioning at chokepoints in constrained waterways, and they provide coverage near attacker origins and destinations in the less geographically-constrained scenarios.

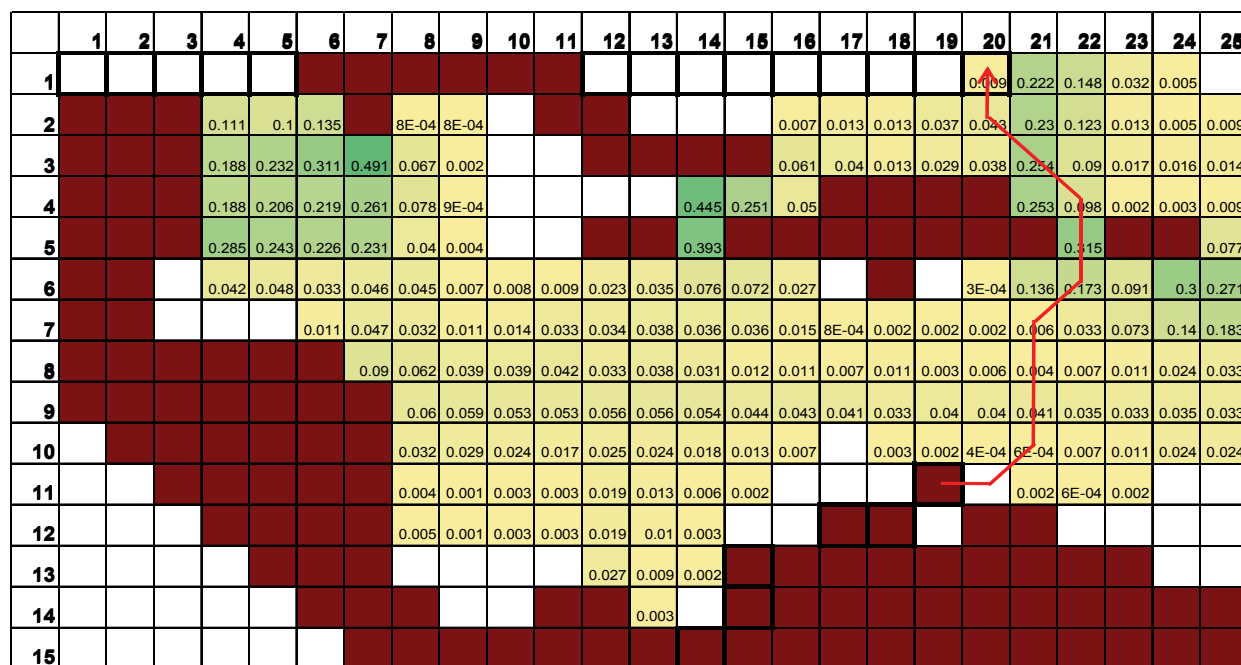


Figure 1: Caribbean Probability Field and Worst-Case Attacker Path.

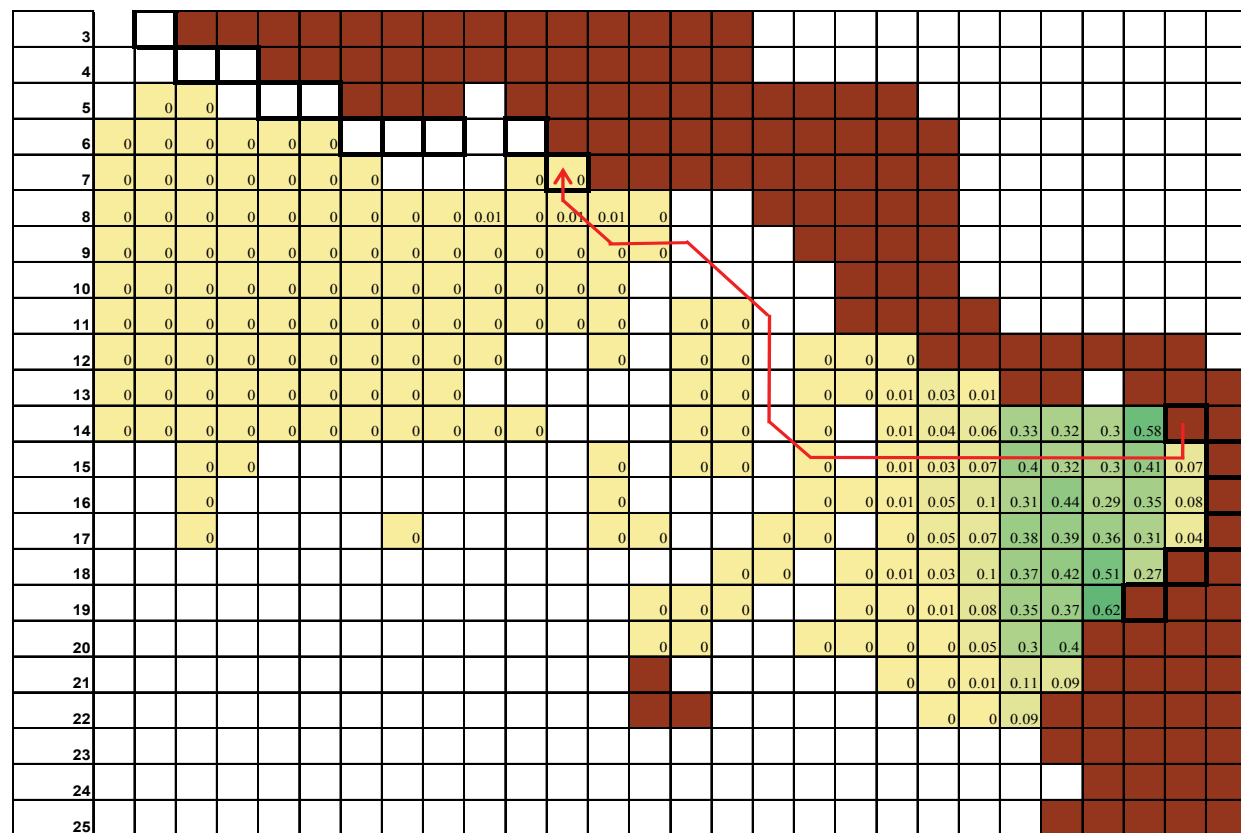


Figure 2: Pacific Probability Field and Worst-Case Attacker Path.

WARFARE INNOVATION WORKSHOP

The Naval Postgraduate School (NPS) Operations Research Navy Warfare Development Command (NWDC) Chair of Warfare Innovation, in coordination with the Naval Warfare Development Command, conducted a Warfare Innovation Workshop on July 16/17 and 23/24 July 2009. The purpose of the workshop was to help NPS students develop new innovative problem solving skills and apply them to a real world challenge facing the fleet today. In addition, the workshop was to be evaluated as a resource for fleet commands to leverage in generating their concept of operations. This three and a half day workshop focused on Concept Generation for countering the self-propelled semi-submersible (SPSS) drug running challenges in the FOURTH FLT AOR. Fourteen NPS students from the USN, USMC and Mexican Navy volunteered to take on this challenge. The workshop was designed to be split over two successive Thursdays and Fridays to reduce the impact on student's regular class schedules and allow time in between for self research and thought.

The participants received briefings from a Joint Inter-agency Task Force -South (JIATF-S) subject matter expert and in-house support

from Office of Naval Intelligence (ONI)-Kennedy Irregular Warfare Center Intel Analysts. They also received an Open Source Intelligence (OSINT) briefing by the NPS Senior Intelligence Officer. Prior to breaking out into two teams they participated in an Innovation Seminar that involved interactive brainstorming and role playing exercises. The participants were divided into one group that was constrained to unclassified sources and a second group that was allowed to include classified research. There was no senior officer involvement until the final briefs. The workshop concluded with out-briefs to the NWDC Assistant Chief of Staff (ACOS) for Concepts, SES Special Agent in Charge DHS/Immigration Customs Enforcement /OPR - SAC West, NPS Co-Chairs for Warfare Innovation, Dean of GSOIS, NPS Chief of Staff and NPS Dean of Students.

Overall the goals of creating a supportive environment for junior officers to innovatively address Concept Development and produce concepts to address the SPSS challenge were achieved. Feedback from a participant survey was both positive and constructive in all areas of the innovation construct.

The Concept Development from both teams addressed all stages of the SPSS kill chain from initial construction through the return of the SPSS pilots to Colombia. The participants explored and raised new concepts for brown water operation coordination, pattern analysis and intelligence fusion. Of particular interest was the idea of using sniffer technology for SPSS construction materials to help locate construction sites. The student from the Mexican Navy is planning on continuing this research in his NPS thesis work.

A copy of the Team Out-Brief is available upon request. Please contact Carol O'Neal at cjoneal@nps.edu for a copy.



The LIBRARIAN'S CORNER— *Greta Marlatt, gmarlatt@nps.edu*

(CONTROL +click, to follow links)

[China's Participation in Anti-Piracy Operations off the Horn of Africa: Drivers and Implications](#)

[Counting the Costs of Somali Piracy](#)

[Maritime Security: Fighting Piracy in the Gulf of Aden and Beyond](#)

Munson, Mark. "[Looking for Anomalies in All the Wrong Places: What Does Maritime Domain Awareness Mean, and Does It Represent a Flawed Analytic Agenda?](#)" US Naval Institute Proceedings, July 2009, v, 135, no. 7, p. 34-37

Recent NPS Thesis

[Murphy, Brian T. - Securing Sub-Saharan Africa's Maritime Environment: Lessons Learned from the Caribbean and Southeast Asia.](#)

[Fact Sheets: United States Actions To Counter Piracy Off the Horn of Africa](#)

Tue, 01 Sep 2009 10:44:07 -0500

United States Actions To Counter Piracy Off the Horn of Africa

<http://www.nps.edu/library/>

<https://www.hsdl.org>

<http://gretaslinks.blogspot.com/>

Future Events:

- [Oct](#)

20-21 Maritime Expo, Long Beach CA <http://www.maritimesecurityexpo.com>

26-29 MORS Workshop: Maritime Domain Awareness & Piracy, to be held at the Chateau Cartier in Ottawa (Capt Doug Otte will attend from NPS)

- [Nov](#)

16-18 Security Network—Maritime Expo, San Diego CA <http://www.thesecuritynetwork.org>